Meeting: 1003, Atlanta, Georgia, AMS CP 1, AMS Contributed Paper Session

1003-05-1584 **Ricky Ini Liu*** (riliu@fas.harvard.edu), 48 Linden Street, Newton, MA 02464. *Counting subrings of $\mathbb{Z}^n$ of index k.*

We consider the problem of determining the number of subrings of the ring $\mathbb{Z}^n$ of a fixed subgroup index k, denoted $f_n(k)$. We present a decomposition theorem for these subrings and calculate explicit expressions for the Dirichlet series generating function $F_n(s) = \sum_{k=0}^{\infty} f_n(k)k^{-s}$ for $n \leq 4$ as well as for the generating function $\Phi_p(x, y) = \sum_{e=0}^{\infty} \sum_{n=0}^{\infty} f_n(p^e)x^e y^n/n!$ modulo p. (Received October 05, 2004)